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ABSTRACT

This study investigated the impact of the Benedum Collaborative Model of Teacher Education at West Virginia University (WVU). Under this model, Professional Development Schools (PDSs) were expected to be sites of best practice, centers of inquiry, and empowered communities. The model raised admissions requirements, reinvented the curriculum, and moved WVU to a 5-year program that conferred a bachelor's degree in a discipline and a master's in education. Researchers used data from WVU student records; interviews with WVU faculty and school administrators, teachers, and students; classroom observations; student scores on the Stanford Achievement Test; and school-level data from the West Virginia Department of Education. They also examined information from surveys of PDS teachers, PDS high school students, and WVU novice teachers between 1995-98. Overall, WVU novice teachers had improved qualifications on entry to WVU and better grades at WVU following introduction of the model. They were highly regarded by PDS staff. PDS students had higher test scores and larger annual math gains than did non-PDS students. There was no definitive evidence that becoming a PDS caused an increase in scores. The PDSs had some success at creating empowered communities, less success at creating centers of inquiry, and wide variation in level of program participation. (SM)

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DOCUMENTED BRIEFING

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RAND

The Benedum Collaborative Model of Teacher Education: A Preliminary Evaluation

Brian Gill and Anders Hove

DB-303.0-EDU

February 2000

Prepared for the Benedum Center for Education Reform

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PREFACE

This research was conducted for the Benedum Center for Education Reform at West Virginia University. The Center is sponsored by the Benedum Foundation of Pittsburgh, Pennsylvania, which over the last ten years has generously supported a new program of teacher education at West Virginia University—a program which is known as the Benedum Collaborative Model of Teacher Education. In the summer of 1999, the Center contacted RAND Education to request an evaluation of the program. RAND Education agreed to conduct a preliminary study of the program during the fall of 1999, and to examine the possibility of a long-term study that would take place over the next several years with the support of multiple funders. This report describes the findings of our preliminary study.

ACKNOWLEDGMENTS

We would like to begin by acknowledging the assistance we received from many individuals throughout the study. First of all, Vivian Owens, Director of the Benedum Center for Education Reform, was unfailingly responsive as our liaison to West Virginia University and the Professional Development Schools. Her assistance was indispensable. Van Dempsey, faculty director of the Benedum Collaborative at WVU, graciously accommodated all of our questions and requests at various points over the last six months. We thank Bill Deaton, Dean of the College of Human Resources & Education, and Anne Nardi, Associate Dean, for permitting us access to critical information from WVU records, and for providing data files to us. The analysis of student achievement in the PDSs could not have been completed without the permission of the five county superintendents and the data cleaning efforts of Karen Nicholson and Marshall Patton in the West Virginia Department of Education; we are in their debt. We were assisted at various points during the study by a number of our colleagues at RAND, most prominently Sheila Kirby, Dominic Brewer, Mike Timpane, Laura Hamilton, and Dan McCaffrey. Finally, we thank the various members of the Collaborative—WVU faculty, PDS faculty and administrators, and WVU novice teachers—who gave their time to talk with us.

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INTRODUCTION

Background

- **Highly skilled teachers are critical to K-12 academic achievement**
- **Professional Development School (PDS) model aims to improve the skills of novice and experienced teachers**
- **WVU was among the first to implement**
- **But little is known about long-term effects**
- **RAND study is an initial attempt to assess process and outcomes**

A decade ago, the College of Human Resources & Education (HR&E) at West Virginia University (WVU) chose to remake its teacher education program to be consistent with the model proposed by the Holmes Group of universities in the late-1980s. The Holmes Group advocated a teacher education program built around Professional Development Schools (PDSs), K-12 schools which would have an intensive, collaborative relationship with the education college. The PDS model aims to improve the training of teacher education students ("novice teachers") by providing more classroom experience; and aims to improve the skills of experienced teachers in the PDSs by providing professional development opportunities and contact with an education college. The PDS is modeled in part after the teaching hospital, in which practitioners take part in advancing the field and training the next generation of professionals. PDSs are expected to be exemplary schools where the best of education research and theory meets the best of education practice. Although the PDS model has now been adopted by numerous education colleges around the country, few systematic evaluations have been conducted.

HR&E at WVU was among the first education colleges to adopt the PDS model, with the financial support of the Benedum Foundation of Pittsburgh, Pennsylvania. Over the last decade, HR&E has established PDS relationships with 21 public schools, at the elementary, middle, and high school levels, in a five-county area around Morgantown. These schools became PDSs at three different points in time when HR&E opened an application process to nearby public schools. In order to be accepted into the program, schools were required to demonstrate a consensus on their teaching staff in favor of becoming a PDS.

The "Benedum Collaborative Model of Teacher Education at West Virginia University" generally follows the Holmes Group principles, with a few philosophical statements of its own. Under the Benedum Collaborative Model, PDSs are expected to be "sites of best practice," exemplifying high-quality teaching; "centers of inquiry," which encourage experimentation and research; and "empowered communities," in which PDS teachers, WVU novices, WVU faculty, and parents of K-12 students actively collaborate in decisionmaking at the school. In terms of curriculum content, both the PDSs and the WVU teacher education courses address the Instructional Goals and Objectives (IGOs) that are established by the state of West Virginia.

The establishment of PDSs was coupled with significant changes to the teacher education program at the college. First of all, WVU chose to move from a four-year bachelor's degree program to a five-year program which confers a bachelor's in a discipline and a master's in education. The college simultaneously raised admissions requirements in the new program. The curriculum was entirely reinvented. Finally, the program added a requirement of extensive and ongoing time in a PDS. In particular, each WVU novice teacher is assigned to spend time in one PDS for three consecutive years. Third-year students at WVU begin working in a PDS for 2 hours each week as tutors. Fourth-year students, known as "participants," spend 5 hours per week in the PDS during the fall semester and 14 hours per week during the spring. Fifth-year students are "interns" who work full-time as student teachers in the PDS during the fall and return to the PDS to conduct research projects during their final spring semester at WVU.

Study Involved Quantitative Data Analysis and Qualitative Interviews and Observations

- **4 years of data from WVU student records**
- **3 years of test data from schools in 5 counties**
- **10 years of West Virginia Report Card data**
- **Data from teacher and student surveys**
- **Visits to all 21 PDSs, including:**
  - **Principal interviews**
  - **Teacher interviews (60)**
  - **WVU student interviews (18)**
  - **Classroom observations**
- **WVU faculty interviews (14)**

The short timeframe and relatively small scope of the study meant that we were largely limited to existing data sets. In consequence, we were able to evaluate only a small subset of the wide variety of goals associated with the program. A long-term, comprehensive evaluation would do more justice to the diversity of goals which the Collaborative aims to serve.

The first part of this report will focus on the WVU novice teachers, relying on quantitative data from WVU student records supplemented by qualitative impressions from our interviews. The second (and largest) part of the report discusses student achievement at the PDSs, based primarily on individual student test scores on the Stanford Achievement Test (9th edition), supplemented with additional school-level data that is published by the West Virginia Department of Education. The last two sections of the report will rely heavily on our interviews and site visits in considering the extent to which the PDSs are realizing some of the less quantifiable aims of the Collaborative, and in describing concerns for the future of the program.

We also examined survey data collected by the Collaborative from PDS teachers, PDS high school students, and WVU novice teachers between 1995 and 1998. Findings from the high school survey will be mentioned briefly in conjunction with other data at two points in the report.

Unfortunately, however, the utility of the high school survey is hampered by the lack of baseline data (i.e., students were not surveyed before their schools became PDSs). The PDS teacher survey data likewise lacks a pre-PDS baseline and was also plagued by low response rates in many schools; we concluded that it was of doubtful reliability. The survey of WVU novice teachers is now outdated, because it does not include novices from the new program.

Summary of RAND's Key Findings

- **WVU novice teachers**
  - **Better qualifications on entry to WVU**
  - **Better grades at WVU**
  - **Highly regarded by PDS staff**
- **PDS students**
  - **Higher test scores and larger annual math gains than non-PDS students**
  - **As yet, no definitive evidence that becoming a PDS causes an increase in scores**
- **The PDS vision**
  - **Some success at creating "empowered communities"**
  - **Less success at creating "centers of inquiry"**
  - **Wide variation in level of program participation**
  - **Challenges lie ahead**

Findings about WVU novice teachers are based on WVU student records (which include high school grades, ACT scores, and WVU grades) and interviews with PDS teaching staff. Findings about PDS students are based largely on three years of Stanford Achievement Test scores for individual students in PDSs and non-PDSs in five West Virginia counties. Findings about the PDS vision are based on impressions from our interviews and visits to the PDSs, as well as the records of the Collaborative; they are not based on systematic survey or comparative data.

This summary is not intended to be comprehensive; it focuses on a number of findings which we perceived as most important.

1. THE WVU NOVICE TEACHERS

Briefing Outline

- **The WVU Novice Teachers**
  - **Qualifications & performance at WVU**
  - **Impressions from the PDSs**
- Test Scores in the Professional Development Schools
  - Stanford 9 score comparison
  - Stanford 9 gains comparison
  - Pre/post analysis of new (1998) PDSs
  - Pre/post analsyis of ACT scores
- PDSs as "Empowered Communities" and "Centers of Inquiry"
- Realizing the vision in the years to come

Qualifications and Collegiate Performance of WVU Novice Teachers Have Improved

	Old program	New program
ACT score	21.1	22.3
High school GPA*	3.29	3.49
WVU GPA*	3.17	3.43

* statistically significant difference (.05 level)

This table compares average figures for the class of 2000 (new program) with a composite average of the classes of 1997-99 (old program). One of the goals sought by WVU in the reinvention of its teacher education program was to improve the academic qualifications of its teacher candidates. HR&E has raised admissions standards for the new program, and now requires applicants to have either a high school GPA of 3.0 or an ACT score of 23. Resulting improvements in the academic qualifications of entering students have not been huge, but they have been consistent. The new program enrolls students with higher ACT scores and higher high school grades than the old program. The ACT score difference is just short of statistical significance at the .05 level; it is significant at .1. (It would also be significant at .05 if we included all students in the new program, rather than just the class of 2000.)[1]

This increase has brought ACT scores in the teacher education program up to the university-wide average. Mean ACT scores for all WVU students have been stable over the past several years, averaging 22.2 for students entering between 1992 and 1995 (and expected to graduate between 1997 and 2000). The national average on the ACT in 1999 was 21.0; the West Virginia state average was 20.2. The improvement shown

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[1] Unless stated otherwise, statistical significance is measured at an alpha level of .05 throughout this report.

here represents an increase from the 56th percentile to the 64th percentile nationally, and one-fourth of a standard deviation in the national score distribution.

These improvements in student qualifications have been followed by improvements in course performance at WVU. This change should be interpreted with caution, because the curriculum has changed and we cannot rule out the possibility that grading standards have changed. Nevertheless, the fact that students in the new program are earning higher grades at WVU is promising. Again the difference is statistically significant.

It should also be noted that any positive effects on the PDSs may result from the selection of better students at WVU. Given existing data, we cannot distinguish the effect of the new program from the effect of higher admissions standards.

WVU Novice Teachers Earn Favorable Reviews from PDS Teaching Staff

- **High ratings for preparation and motivation**
- **Long-term (3-year) relationships**
- **High comfort level and good classroom management skills**
- **Moreover, novice teachers universally praise their classroom experiences**

Our findings here are based on limited evidence derived from interviews and classroom visits made to each of the 21 Professional Development Schools. At a typical school, we interviewed the principal and 2-4 teachers (independently). Although interviews followed a structured protocol, the sample of teachers selected was not random or representative: the teachers were chosen by the principal or the Collaborative site coordinator, and therefore tended to be those who were unusually active in PDS activities. We also interviewed 18 WVU novices. The novices we interviewed were those who were available, and they were not divided equally among the PDSs. Our conclusions should be viewed as tentative observations which need to be supplemented by more systematic surveys and observations.

We found that host teachers in the PDSs had consistently positive opinions of the WVU novice teachers under their supervision. The host teachers gave the WVU novices high ratings in terms of preparation and motivation, often comparing the novices favorably to both WVU students from the old program and to novice teachers from other colleges. Host teachers attributed the high preparation level of the WVU novices to the three-year placements in the PDSs: each fifth-year novice responsible for student teaching had previously spent two years working with teachers and students in the same school. This extensive experience in the PDSs

was universally regarded by the novices themselves as the most useful part of the WVU teacher education program. They believed that their three-year placements made them especially well prepared to begin their teaching careers.

Previously collected surveys suggest that WVU novice teachers are viewed favorably by high school students as well. In general, the surveys that the Collaborative administered to PDS high school students in 1995 and 1997 showed few differences across the two survey years. One item that showed a statistically significant and substantial improvement, however, was directly related to the WVU novices. In 1997—the first year that PDSs hosted WVU novices from the new teacher education program—PDS high school students more strongly endorsed the view that "Having WVU student teachers in my classes is a positive factor in my learning experience." The improvement on this item as compared with 1995 was consistent and statistically significant in each of the four high schools that were then PDSs. The evidence does not permit us to determine whether the improvement resulted from raised admissions standards in the new program, curricular changes in the new program, or the new tutoring role undertaken by WVU novices. Additional surveys might help to determine whether the students' favorable impression of the WVU novices has been maintained as well as the specific source of the improvement.

2. TEST SCORES IN THE PROFESSIONAL DEVELOPMENT SCHOOLS

Briefing Outline

- The WVU Novice Teachers
  - Qualifications & performance at WVU
  - Impressions from the PDSs
- **Test Scores in the Professional Development Schools**
  - **Stanford 9 score comparison**
  - **Stanford 9 gains comparison**
  - **Pre/post analysis of new (1998) PDSs**
  - **Pre/post analsyis of ACT scores**
- PDSs as "Empowered Communities" and "Centers of Inquiry"
- Realizing the vision in the years to come

Test Scores Are an Incomplete Measure of the Success of the Collaborative

- **Program not designed to focus on test scores**
- **Tests measure only a narrow range of outcomes**
- **But few quantitative outcome measures are available**
- **Stanford test was chosen as the state standard to reflect Instructional Goals and Objectives**

A long-term evaluation would make use of richer sources of educational outcome data that are specifically designed to reflect the goals of the Collaborative. This preliminary evaluation had to make use of the data that were available. In terms of educational outcomes, the best available data are the Stanford Achievement Test (9th edition) scores of individual students in the PDSs and in other schools in their counties over the last three years. PDSs aim to serve as "sites of best practice." "Best practice" is defined broadly by the Collaborative, to include much more than the basic skills measured by the Stanford Achievement Test. Nevertheless, one of the aims of "best practice" in the PDSs is the achievement of the state's Instructional Goals and Objectives (IGOs). The Stanford Achievement Test was chosen as the statewide standard because it reflects the IGOs. To the extent that the PDSs are successfully meeting the IGOs, then, we hope to find evidence of that success in Stanford scores.

What We Can—and Can't—Answer With Existing Quantitative Data

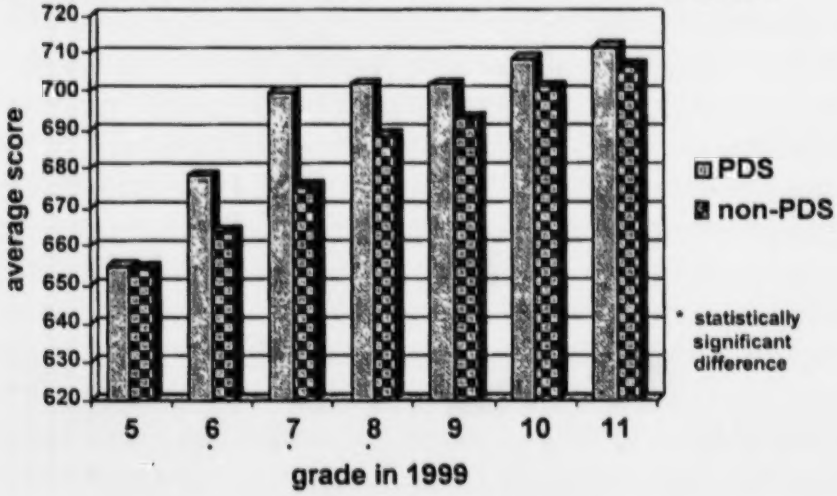
1. **Do PDS students have higher test scores?**
   - **Answer using 1999 Stanford scaled scores**
2. **If PDS students score better, is it because their schools are better?**
   - **Partial answer using 1998-99 Stanford gains**
3. **If PDSs are better schools, is it because they are PDSs?**
   - **Preliminary answer using 1997-99 Stanford gain changes for new PDSs**
   - **Partial answer using attendance and ACT score data**

We will address these questions in order in the next several slides. The questions are arranged in increasing order of complexity. The first question can be answered with a direct comparison of the most recent scores on the Stanford Achievement Test (9th edition). We can begin to answer the second question by examining annual gains, rather than scores, and by examining the results of a "natural experiment" related to students entering high school. The third question is the most important one on the list, and the most difficult to answer. For most PDSs, we lack baseline Stanford test score data from pre-PDS years. Fortunately, at least a little evidence is available on all three questions.

Each of the subsequent slides will have a header indicating which of the three questions is addressed.

QUESTION 1

PDS Students Have Higher Stanford Basic Skills Scores than Non-PDS Students



This chart shows mean basic skills scores on the Stanford 9 in 1999. The basic skills score is a composite of subject-matter scores in reading, math, and language. The orange bars show the means for all of the PDSs; the green bars show the means for all other schools in the five counties that include PDSs. In 1999, mean basic skills scores are higher in PDSs than in non-PDSs in grades six through eleven. The difference is statistically significant (.05 level) in grades 6, 7, and 8. Scores on individual subject tests show advantages for PDS students in all subjects, with the largest advantages in math.

On a national percentile scale, these scores put the PDSs above average at every grade level. The PDS mean basic skills scores translate into national rankings ranging from the 60th percentile (in grade 5) to the 80th percentile (in grade 7). PDS averages also exceed the West Virginia state average in all grades except grade 5.

It should be noted that this chart is purely descriptive—these scores cannot tell us about the effectiveness of the program, because we do not know if PDSs had higher scores even before they became PDSs.

Finally, statistical significance merits a brief comment here. Our assessment of the statistical significance of these findings—as well as the remainder of our findings on Stanford 9 scores and gains in the PDSs—involved an adjustment to account for the clustering of scores within schools. Because each particular grade level includes only a small number of PDSs, the clustering adjustment sets a high standard for achieving statistical significance. In consequence, differences that have a substantial magnitude may not achieve statistical significance. Lack of statistical significance does not mean we should ignore the effect. Indeed, in the case of the scores (as well as math gains that will be shown shortly), the consistency of the difference across grade levels strongly suggests that the difference is real. Indeed, we believe that it is more appropriate here to examine the magnitude of the differences than their statistical significance. Our discussions of gain differences will focus on effect sizes.

QUESTION 2

Comparison of Annual Score Gains Provides Better Information on School Performance

- **Do high scores result from better schools or students who are better prepared for school?**
- **Subtract out prior preparation by comparing annual gains**
- **Compare 1998-99 Stanford average gains in PDSs and non-PDSs**

The gain measurements use West Virginia Education Information System (WVEIS) identifiers to follow individual students from one year to the next. A student's gain is the difference between her score in 1999 and her score in 1998.

Using gain scores helps to control for student preparation prior to entering school, by subtracting out prior scores. The control is incomplete, of course, because out-of-school factors have some effect on annual gains as well as overall scores. Unfortunately, we lack data on students' socioeconomic status which would help us to control for family resources.

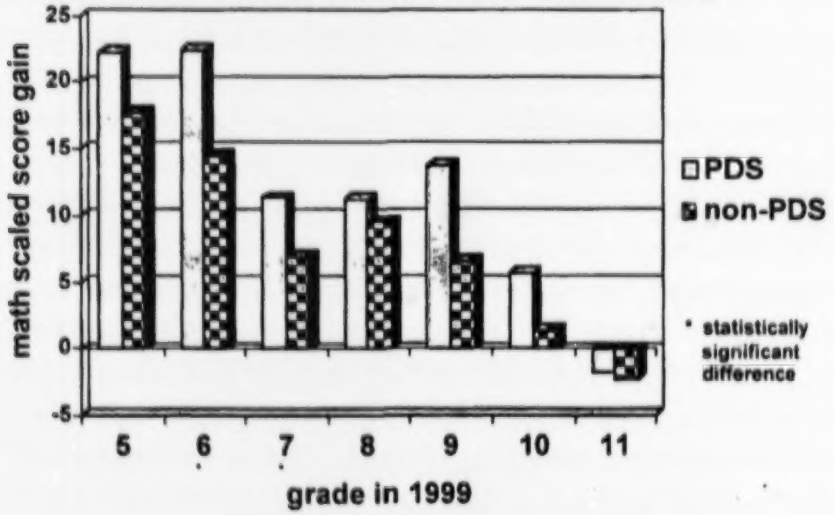
Analysis of Gains Suggests Differences By Subject Matter

- **Basic skills score is a composite of reading, math, language**
- **Reading gains: no substantial differences between PDSs and non-PDSs**
- **Language gains: small advantages for PDSs in a few grades (non-significant)**
- **The largest differences in gains between PDSs and non-PDSs are in math**

Although PDS students have higher scores than non-PDS students in all three subjects, the analysis of gains demonstrates consistent and substantial advantages only in math. The remainder of our analysis will focus on gains in math, keeping in mind that we did not find substantial advantages for PDSs in gains in language and reading.

QUESTION 2

PDS Students Show Larger Annual Math Gains Than Non-PDS Students



The measure here is the mean scaled math score gain from 1998 to 1999 for individual students on the Stanford 9. The differences in gains between PDS students and non-PDS students are fairly substantial at several grade levels—though we do not yet know if the difference is a result of the schools' participation in the Collaborative. In terms of standard deviations, the advantage for PDS students ranges from zero to two-tenths of a standard deviation. Averaging across grades, math gains for PDS students are 0.11 standard deviations higher than math gains for non-PDS students. By comparison, the famed Tennessee experiment in class-size reduction—regarded as a major success in education reform—produced effect sizes around 0.2 standard deviations (in both math and reading).

Math advantages for PDS students are consistent across ability levels: we found PDS advantages comparable to those shown here when we isolated students with scores in the lowest third of the distribution.

Note that gains decline as grade level increases, in both PDSs and non-PDSs. This is probably an effect of the test, which measures basic skills that are more likely to be taught in earlier grades.

QUESTION 2

A Natural Experiment: High School Assignment

- **Starting point: non-PDS middle and junior high schools**
- **Treatment: PDS high school vs. non-PDS high school**
- **After two years in high school, how did their gains compare?**

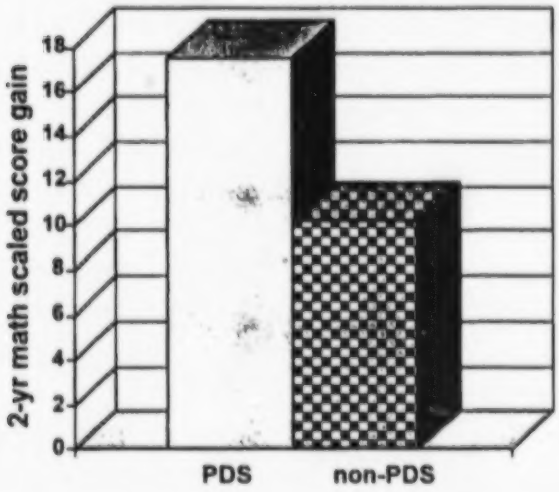
The only way to be sure that the test-score differences on the preceding charts result from school effects rather than student selection effects would be to run an experiment in which students are randomly assigned to PDSs and non-PDSs. That is impossible, but the next best method is to find an existing natural experiment in the data. A natural experiment is a situation in which two groups begin in comparable circumstances and are then given different treatments.

Fortunately, advancement to high school provides a kind of natural experiment to test the PDSs. Of all the students who were in non-PDS middle and junior high schools in 1997, some moved into PDS high schools and some into non-PDS high schools in 1998. We can follow them through the first two years of high school and compare their Stanford score gains over the period. We can verify that the groups were comparable prior to entering high school, because their 1997 scores were similar. The group bound for PDS high schools had a mean Stanford math score of 695 in 1997 prior to entering high school, compared to 692 for those bound for non-PDS high schools.

Note that because this analysis follows students from 1997, this analysis excludes high schools that joined the program in 1998. This analysis includes the first two cohorts of PDS high schools (those that joined in 1990 and 1995).

QUESTION 2

Math Gains for Students Who Entered PDS High Schools Are Larger



For all students in non-PDS middle- or junior high schools, those who enter PDS high schools have greater math gains over their first two years in high school compared with those who enter non-PDS high schools. Average 2-year math gain for the students entering PDS high schools was 17.5 scaled points, versus 10.5 scaled points for students entering non-PDS high schools. Although this difference does not achieve statistical significance, its size is substantial, nearly two-tenths of a standard deviation.

Question Two Summary: Larger Math Gains in PDSs

- We lack definitive experimental evidence and demographic variables
- But comparing gains helps to control for student background advantages
- And high school assignment is a natural experiment
- Both of these analyses suggest that PDS advantage in math is at least partly attributable to the schools

QUESTION 3

Does Being a PDS Help? Evidence from the Newest PDSs

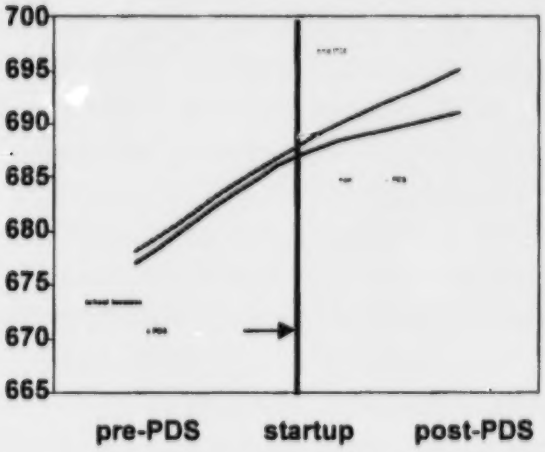
- **Gain comparisons suggest that PDSs are raising math test scores**
- **Follow-up:**
  - **Are these good schools because they are PDSs, or**
  - **Are they PDSs because they are good schools?**
- **Pre-PDS Stanford 9 scores unavailable for early PDSs**
- **But 1998 PDSs provide a unique opportunity to compare pre- and post-PDS test scores**

The PDSs which joined the program in 1998 are the only ones for which we have test scores (and gain scores) both prior to their entry in the program and following their entry in the program.

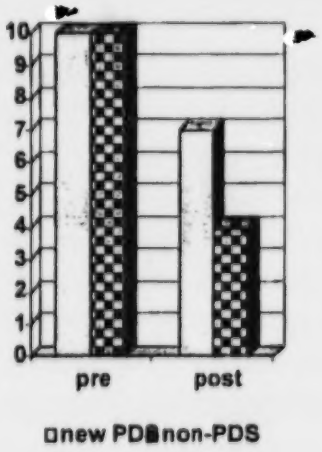
QUESTION 3

What Should a PDS Effect Look Like?

Scores might look like this:



Gains might look like this:



This is a hypothetical example which illustrates what a PDS effect on Stanford Achievement Test scores might look like.

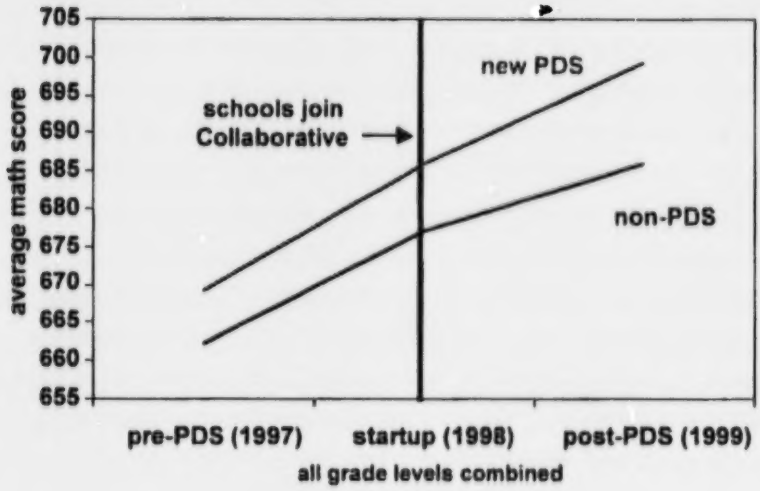
In all schools, gains decline with age: see the green line on the first graph. This is consistent with what we've already seen in our data.

If joining the Collaborative (becoming a PDS) confers a test-score advantage, gains will be larger in a new PDS than in other schools, even though gains are still declining with a student's age. In the new PDS, scores might rise faster and gains might decline more slowly.

In order to determine whether a change has happened, we need to compare gain differentials in pre- and post-PDS years for schools initiating the PDS relationship and for schools remaining outside of the program. The scores shown on the first graph involve the gains shown on the second. Thus, in this hypothetical example, we can see that becoming a PDS causes an improvement because the decline in gains is less than for other schools.

QUESTION 3

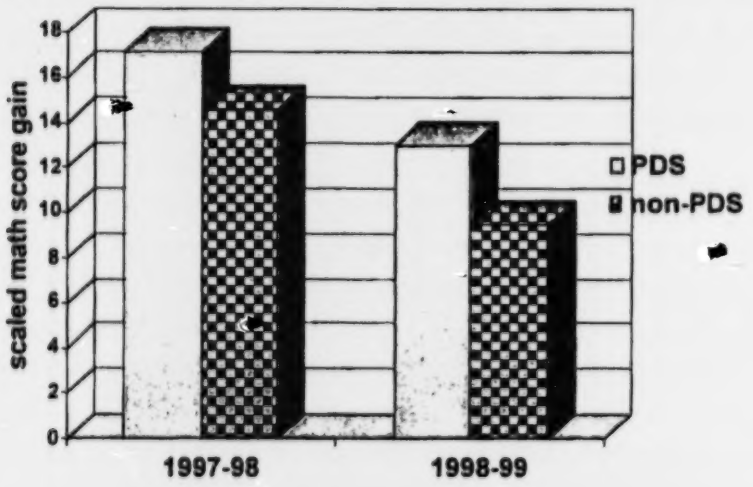
Average Math Scores in New PDSs and Non-PDSs, 1997-99



This chart shows average math scores, aggregated across all grade levels, for students in non-PDSs and new PDSs from 1997 to 1999. Students are included in the data only if they were in the same PDS cohort (new PDSs or non-PDSs) in 1998 and 1999. Note that scores of students in the PDSs were higher even in 1997, before they became PDSs. The schools that were about to become PDSs, moreover, showed slightly higher math gains than the comparison group even prior to entering the Collaborative. The green line for non-PDSs follows the expected trajectory in 1999: the rate of increase in scores declines. In new PDSs, the rate of increase also declines, but the scores are rising somewhat faster than in non-PDSs. This will become clearer on the next chart, which graphs the gains in the pre- and post-years.

QUESTION 3

Average Math Gains in New PDSs and Non-PDSs, 1997-98 and 1998-99



This chart shows the gains associated with the scores represented on the previous page. Here we can see that students in pre-PDS schools showed higher gains both before and after their schools became PDSs. In the first year of PDS status, the differential in gains increased very slightly: an advantage of 2.5 scaled points grew to 3.5 points.

The fact that we have only one year of post-PDS data for the new PDSs means that the results should be interpreted with caution. It is possible that the improvements are a result of a "Hawthorne effect," in which enthusiasm for a new program drives a temporary increase in scores. The new PDSs should be watched carefully over the next few years to determine whether the effect is maintained.

QUESTION 3

Does Being a PDS Help? Attendance, Graduation, ACT Scores

- **Measures are not clearly related to program goals**
- **Attendance data show no clear patterns**
- **Graduation rate data unavailable**
- **ACT score data unavailable prior to entry of first cohort of PDSs (1990)**
- **ACT score data for second PDS cohort (1995) is suggestive and promising**

Because Stanford test score data are available only for the last three years, we looked at longer-term data from the West Virginia Report Cards to seek other evidence that could be assessed before and after schools joined the Collaborative. Graduation rates, unfortunately, were unavailable in a form that was consistent across time. Attendance rates and high school ACT scores are perhaps even more tangential to program goals than are Stanford 9 scores, but we examined them because no other long-term quantitative outcome measures were available, and because they are outcomes of general interest to the Collaborative Advisory Board and the public.[2]

No effect was found on attendance. Although attendance has increased gradually in PDSs, it has also increased at a comparable rate in non-PDSs.

ACT scores were available in pre- and post- timeframes only for the second cohort of PDSs, which joined the program in 1994-95. Results are shown on the following slide.

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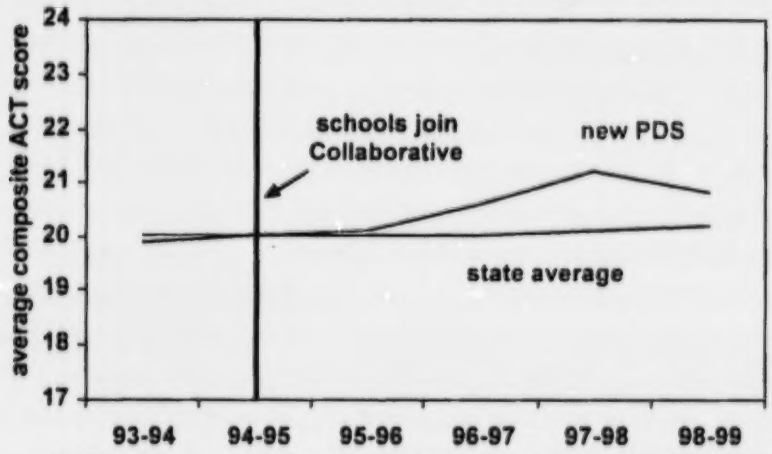
[2] We chose ACT scores rather than SAT scores because more high school students take the ACT in West Virginia.

QUESTION 3

Does Being a PDS Help?
ACT Scores in Cohort 2 High Schools



NOTE: We do not know if this change is statistically significant

We have ACT score data on the second cohort of PDS high schools (which joined the program in 1995) for years preceding and following their entry into the program. The data indicates that composite ACT scores in this cohort have gone up slightly in the years after they joined the Collaborative. The rise is only about one point on the scale (an improvement from 48th percentile to 56th percentile nationally), and we cannot determine its statistical significance because we lack individual student scores.[3] Nevertheless, it is promising. The size of the improvement in gains as compared with the statewide average is about one-eighth of a standard deviation. An effect size of this magnitude—if it is maintained—is in the range of those achieved by other educational interventions which are regarded as successful.

Assessment of the importance of this trend will require watching the scores to see whether the difference is maintained and whether scores in the newest cohort of PDS high schools follow a similar trajectory over the next few years.

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[3] It would be interesting to know whether this trend, like the differences in Stanford test scores, is driven by the math component of the test. Unfortunately, we have data only on the composite ACT scores.

Test-Score Analysis Summary

- **PDS students have higher average basic skills scores than non-PDS students**
- **PDSs produce larger gains in math**
- **Students in new PDSs show a first-year test-score change which is slightly positive but not significant**
- **Longer-term analysis of older PDSs suggests possible effect on ACT scores**

We found that PDS students have consistently higher scores than non-PDS students on all subjects on the Stanford 9. The analysis of annual score gains isolated math as the subject in which PDS students had a consistent and substantial advantage; this analysis and a natural experiment strongly suggest that the math advantage is not merely an effect of student selection, but is a result of differences in school performance.

The hardest question to answer is whether the PDS advantage in math is caused by the schools' participation in the collaborative. For new PDSs, we have only one year of post-PDS gains on the Stanford Achievement Test, so it would be surprising to find a large effect. Students in the newest PDSs had an advantage over non-PDS students in math even prior to the schools' entry into the program. In the first year after the new schools Collaborative, their students' advantage increased by a small, statistically insignificant amount.

For older PDSs, we cannot observe the effect of joining the program on Stanford 9 scores. We do, however, observe an increase in mean ACT scores for high schools which became PDSs in 1994-95. This increase may not be statistically significant, but it is promising.

The increase in ACT scores became visible two to three years after the schools joined the Collaborative. This timeframe suggests that it may be

too early to judge the effect of joining the Collaborative on the new (1998) PDSs, for which we have only one year of post-PDS data. Stanford 9 scores in the new PDSs should be observed for several more years to determine whether those schools show an increasing advantage over non-PDSs.

3. PROFESSIONAL DEVELOPMENT SCHOOLS AS "EMPOWERED COMMUNITIES" AND "CENTERS OF INQUIRY"

Briefing Outline

- The WVU Novice Teachers
  - Qualifications & performance at WVU
  - Impressions from the PDSs
- Test scores in the Professional Development Schools
  - Stanford 9 score comparison
  - Stanford 9 gains comparison
  - Pre/post analysis of new (1998) PDSs
  - Pre/post analsyis of ACT scores
- **PDSs as "Empowered Communities" and "Centers of Inquiry"**
- Realizing the vision in the years to come

Findings in this section are based on our interviews and site visits. They are impressionistic rather than systematic, and should be confirmed with comparative follow-up work.

PDSs Have Taken Steps Toward Becoming "Empowered Communities"

- **PDS status does not change basic governance structure**
- **But PDS teachers feel empowered with new opportunity to direct their professional development**
- **PDS teachers feel respected as peers of WVU faculty**
- **PDS teachers are empowered with authority to evaluate novice teachers**
- **Parental learning opportunities have increased, according to high school student survey**

PDSs aim to be inclusive "empowered communities" involving administrators, PDS faculty, university faculty, students, parents, and the school's community. PDS faculties are expected to take a larger role in their own professional development and in the education of novice teachers. Parents are expected to be included in PDS activities. Our impressions from visits and interviews suggest that many PDSs are exhibiting important aspects of the "empowered community" model.

It should be noted that the transfer of authority for evaluating the classroom work of novice teachers from WVU faculty to PDS faculty has not been achieved without bumps. Some host teachers are uncomfortable with their new power, and would like more guidance from WVU. This discomfort, however, may be temporary. Teachers are unused to having so much influence on teacher education; with more time and experience, they may become accustomed to their larger role.

PDSs Fall Short of Aims as "Centers of Inquiry"

- **Many teachers participate in professional conferences**
- **But collaborative research between WVU faculty and PDS faculty happens only at a few PDSs**
- **WVU student research projects begin this spring**

The Collaborative defines "inquiry" much more broadly than traditional research, and an inquisitive attitude toward pedagogy was apparent in many of the teachers who spoke to us. Moreover, many teachers we spoke with were delighted with new opportunities to attend professional conferences through the Collaborative—including opportunities to present their own research. But we did not perceive that most of the PDSs were sites of much collaborative research between PDS faculty and WVU faculty—which is a specific aim of the PDS model. There were notable exceptions, and we spoke with a few teachers who were eager to share with us the publications they had produced with colleagues at WVU. On the whole, however, too many of the PDS staff we spoke with were unaware of any collaborative research being conducted at their schools.

The major research projects required by WVU of novice teachers will be undertaken at the PDS sites. These projects will begin this spring, and may help to jump-start the PDS research agenda.

4. REALIZING THE VISION IN THE YEARS TO COME

Briefing Outline

- The WVU Novice Teachers
  - Qualifications & performance at WVU
  - Impressions from the PDSs
- Test Scores in the Professional Development Schools
  - Stanford 9 score comparison
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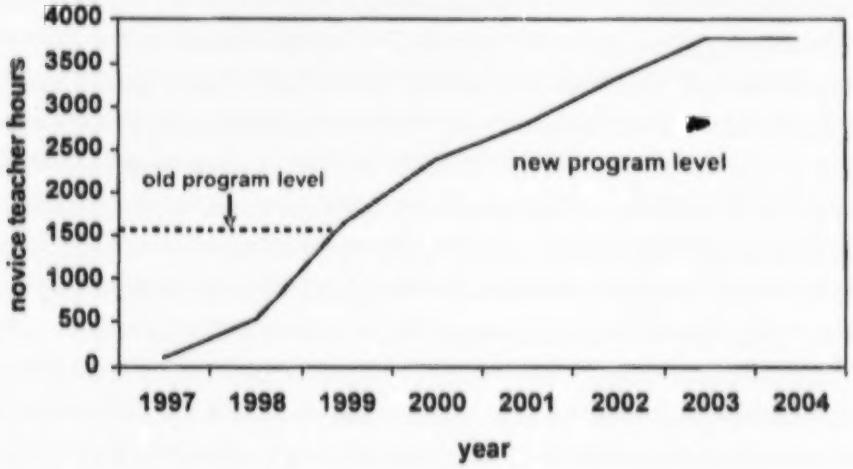
  - Pre/post analysis of new (1998) PDSs
  - Pre/post analsyis of ACT scores
- PDSs as "Empowered Communities" and "Centers of Inquiry"
- **Realizing the vision in the years to come**

Looking Ahead: Novice Teacher Contact With the PDSs Will Increase Dramatically



Enrollment in the teacher education program is growing rapidly. Although the first graduating class this year will have only about 40 members, WVU aims for 120 per year over the long term, and enrollments are already well on their way to reaching that level. Placement hours in the PDSs will grow along with enrollment in the program.

This chart shows the average number of hours that WVU novice teachers (in the new program) spend in PDS schools every week. By comparison, one year of placements in the old program amounted to about 1500 hours in the PDSs. That level was matched in 1999 and soon will be far exceeded. In terms of full-time equivalent teachers, the increase in novice contact hours shown on this graph represents an increase from 2 FTEs in 1997 to 95 FTEs in 2003. The 1999 level is about 40 FTEs.

To the extent that PDS effects result from the influence of the WVU novices on the schools, the effects may increase in coming years. High school survey results suggest that the new program may make a real difference: as noted earlier, one of the few questions on which there was statistically significant and substantial improvement between 1995 and 1997 concerned the impact of WVU students in the classroom. That impact should grow substantially over the next few years.

Intensity of Program Participation Varies Widely Across PDSs

Novice teacher contact	**<5 hrs per 100 pupils**	**to**	**>35 hrs per 100 pupils**
Benedum grants	**<$6000 over 2 years**	**to**	**>$100,000 over 10 years**
WVU faculty contact	**Almost none**	**to**	**• Active liaison • Collaborative research • WVU courses on site**

Although all PDSs are now experiencing a rapid increase in time spent by WVU students, the PDS treatment is different at each school. Differences in PDS treatment are partly by design: the PDS relationship is collaborative, and the staff at each school set the direction for professional development at that school. Other differences—notably in grant funding—relate to the length of time a school has been a PDS.

But some of the differences are not part of the plan and will not be naturally resolved over time. The Collaborative needs to ensure that no PDSs are neglected. The lack of WVU faculty contact at a few of the PDSs is one of the most worrisome issues. Our interviews suggest that the NCATE draft standard suggestion that "university faculty spend no less than one day per week at PDS" is not being followed at several PDSs. As the 1999-2000 academic year began, 8 of the 20 PDSs lacked a WVU faculty liaison. Although the leadership of the Collaborative has worked tirelessly to find liaisons, the difficulty suggests that the problem is likely to recur in the future.

Concerns for the Future

- **Structural incentives for WVU faculty**
- **Difference between a PDS and a teaching hospital**
- **Institutionalization of professional development funding**
- **Space for WVU student placements at the PDSs**
- **Employment for WVU graduates in West Virginia**
- **Measures of success**

One reason that the leadership of the Collaborative has trouble finding liaisons for the PDSs is that many WVU faculty do not perceive the rewards of PDS participation to be commensurate with the effort required. This problem is evident not only in the difficulty of finding liaisons, but also in the small number of WVU research collaborations at most of the PDSs. Although some faculty members have been heroic in their devotion to the program, the Collaborative depends too much on the personal commitment of a few dedicated individuals. Continued success in the long term may depend on fundamental changes in the reward structure for WVU faculty. Fortunately, the College of Human Resources and Education (HR&E) has taken rhetorical steps in this direction already—but the rhetoric will have to be backed up in the tenure process, which will require the support of the university as well as the college.

These incentives are particularly important for the long-term success of the model because the PDS, while modeled on a teaching hospital, differs from that model in one important respect: in a teaching hospital, the university faculty and the professional practitioners are the same people; in a PDS, they are not. The fact that WVU faculty are not public-school teachers means that additional effort is necessary to maintain close links between the university and the PDS.

Another institutional hurdle is the lack of flexibility in public school financing. The Benedum Foundation cannot be expected to fund professional development at the PDSs indefinitely. If this program is shown to be successful, it should be possible for PDSs to devote some of their regular state and local funding to professional development activities.

The capacity of the PDSs to handle WVU's enrollment growth is an additional concern. Although some of the PDSs are eager to take on a significantly larger number of WVU students, it is not immediately clear that the existing group of 21 PDSs will be sufficient to provide placements for three cohorts of WVU students when the program reaches full enrollment.

A final concern relates to the interests of the state of West Virginia. In our limited, unsystematic sample of interviews of WVU students, we found that many plan to leave West Virginia after graduating. This is partly a matter of demographics: faster-growing states have more teaching positions open. But it is also related to a system of hiring which gives preference to applicants who have spent time in the substitute pool—making it difficult for new graduates to find jobs.

Need for a Longitudinal Study

- **Outcome measures which match program goals**
- **Systematic examination of instruction: "best practice" in the PDSs**
- **Explicit comparison with non-PDSs**
- **Distinguish components of reform: teacher education and professional development**
- **Changes in teaching at WVU**
- **Influence of novice teachers will increase**
- **Follow WVU graduates into the field**

As noted earlier, Stanford 9 test scores were measures of convenience and necessity; they are not closely aligned with the wide-ranging goals of the Collaborative. Outcome measures which carefully map goals would be desirable. Higher retention of teachers in the profession, for example, may well be one of the most important effects of the program; a long-term study should evaluate the retention rates of both PDS teachers and WVU graduates. Although the PDSs are doing well on some test-score measures, it would be unfortunate if their success becomes defined entirely in those terms, and it would be unfortunate if they were pressured to "teach to the test." Some PDS staff told us that they are concerned that the creative, innovative methods which they regard as "best practice" will not be reflected in test scores. The program must be evaluated in terms which capture the full range of "best practice" aimed for.

In addition, a comprehensive study would focus on the instructional process as well as the outcomes. We saw many examples of creative teaching that may have benefits that cannot be measured by standardized tests. "Best practice" should be measured directly by assessing instructional practices in the PDSs.

Of course, it is impossible to know how exceptional those creative practices were without systematic comparison of instructional practices in PDSs and a group of non-PDSs. This preliminary study permitted comparison only in the realm of test scores; comparison along multiple dimensions is necessary for a comprehensive evaluation.

A more in-depth study would distinguish between the two major components of the Collaborative, teacher education and professional development. While the two components are linked in significant ways, it will be important to understand how both processes are working. It would be useful, for example, to collect classroom-level data in order to observe the direct effect of novice teachers on the students in their classrooms. Variations in the level of implementation at different PDS sites could be measured systematically to determine the different effects of different components of the program. Moreover, a comprehensive study would examine changes at HR&E as well as the PDSs, asking how WVU faculty have learned from their K-12 colleagues.

Further study is also necessary because the program has not yet fully ripened. As we have seen, the upcoming growth in enrollment in the teacher education program means that contact hours of WVU students in the PDSs will increase dramatically over the next few years. Most PDSs have not yet seen the intensity of involvement of novice teachers that will prevail when the program reaches full enrollment.

Moreover, some of the program's most important intended effects will be outside the PDSs, in the classrooms and schools where WVU graduates take full-time teaching positions. As the first class from the new program will graduate only this year, all of this potential effect is in the future.

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